

the spectator) is white. The arms in his case are impaled, that is, divided by a perpendicular line down the centre of the shield; those of the husband at the dexter side being black, to indicate his death. The crest is placed over the shield, and beneath it the family motto.

When a wife dies, leaving her husband surviving, the ground of the hatchment is black on the side opposite to the right hand of the person looking at it; at the opposite side, white. Their arms are displayed as in the preceding case, but without crest or motto, and the shield appears suspended by a ribbon in a bow, and ornamented with a cherub's head and wings.

The hatchments of ladies (except peeresses, who are entitled to a robe of estate) are invariably paloted without mantle, helmet, crest, or family motto, although funeral words and sentences are sometimes introduced.

A widower's hatchment represents his arms with those of his wife in the same manner as when living; that is, impaled, or divided by a perpendicular line down the centre of the shield. His crest and motto are also emblazoned, and all the ground outside the escutcheon is black.

The hatchment of a widow represents her arms impaled with those of her husband, and enclosed in a lozenge, having a bow of ribbon at the top, and ornamented with a cherub's head and wings; all the ground outside the shield being black.

For a man leaving a second wife, the hatchment represents his arms (not impaled) on a black ground. On the dexter side, or that opposite the left hand of the spectator, is placed, apart from the shield of the husband, a small funeral escutcheon, on which his arms with those of his first wife are impaled; all the ground at this side of the hatchment being black, to indicate her decease. On the opposite side of the hatchment, that is, facing the right hand of the person looking at it, another small escutcheon is similarly placed apart from the husband's shield, and on it are displayed his arms impaled with those of his second wife; the ground at the extreme sinister side of the shield being white, to show that she survives him.

If a widower or bachelor be the last of his family, a skull or death's head (heraldically termed a *mort*) is annexed to the escutcheon, the arms, crest, and motto being displayed in the manner already described; and the hatchment of a maid or widow who is the last of her house represents the arms in a lozenge, with a *mort* annexed.

The hatchments of peers and peeresses have their distinguishing coronets.

On the hatchments of baronets a front-faced open helmet is placed over the shield, on some part of which is displayed the red hand.

The armorial bearings of knights are surrounded with the insignia of their respective orders, and surmounted with the front-faced open helmet, which is also assigned to knights bachelors.

Archbishops' and bishops' hatchments represent their arms impaled with those of their diocese, the latter being placed on the dexter side, that is, opposite the left hand of the person who looks at it; consequently the opposite side is painted black, that under the arms of the see being white.

The hatchment of the lady of an archbishop or bishop represents two shields; that to the left of the spectator displays the arms of the diocese impaling the paternal coat, and surmounted by the mitre. The sinister shield (that is, the spectator's right) is suspended by a knot, bearing the prelate's family arms impaled with those of his wife; the surface of the hatchment underneath the sinister shield being black, to denote the lady's death.

The same rule is observed with respect to the hatchments of ladies of knights of the different orders, while those of peeresses who have married commoners display the arms of their dignity at the sinister side (that is, the side opposite the spectator's right) apart from the heraldic bearing of their husbands.

PASSAGE OF WATER THROUGH PIPES.

In the report of the Inspector of the Board of Health on the sanitary state of Altrincham, it is said that a 6-inch pipe, with an inclination of 1 in 60, will discharge 75 cubic feet of water per minute, or 675,000 cubic feet per 24 hours, which would be equal to the drainage of 14 acres of town land. This statement, I presume, is the result of experiments on the flow of water through pipes made under the direction of the Metropolitan Sewerage Commissioners, so inadvertently published, as it appears, by an officer of that establishment, in the *Mechanics' Magazine*.

The results of these experiments differ materially from that arrived at by the formula laid down by Hawkesley, in the reports of the Health of Towns Commission, where he gives the flow of water through a 6-inch pipe, with a fall of 1 in 60, to be only 52 cubic feet per minute, and the area it is capable of draining

being 0.5 acres of town land and 1 acre of rural district.

By a somewhat singular coincidence, Beardmore, in his "Hydraulic Tables," very recently published, arrives at nearly similar results, from similar data to that of Hawkesley, viz., 53 cubic feet per minute.

These, as you observe, are serious discrepancies, and may be accounted for in no other way than that the one experimented upon the flow of pure water through pipes, the others calculated upon the flow of sewage,—sewage, as you are aware, containing a great quantity of solid matter in suspension, that would materially retard its velocity, and consequently its discharge. If the experiments made in Greek-street were intended as a "practical illustration" of the flow of sewage in the drainage of a town, from the manner in which those experiments were conducted, viz., with pure water, the results arrived at must necessarily be erroneous, giving a greater quantity than if the ordinary sewage of a town had been used instead.

Phillips, in his evidences before the Metropolitan Commissioners, from close and lengthened observations, thinks that drains should be made of sufficient capacity to take 1 inch of rain-fall per hour, or 60 cubic feet per minute, in London, where the mean annual rain-fall is about 24 inches; while the annual rain-fall in the neighbourhood of Altrincham is much greater, being from 33 to 43 inches, and yet about 5 cubic feet per acre is considered to be the maximum quantity of water to be provided for in flowing off the surfaces even in times of storms.

These statements and opinions are so much at variance, that I have ventured to direct your attention to them, in order to have them elucidated, as they seem rather to perplex the practical man than otherwise, for whose benefit, I presume, they were more especially intended.

BAYLIS.

ENCROACHMENTS ON ST. JAMES'S AND THE GREEN PARK.

I WOULD ask what necessity there can be in looking at the plan for what is termed "improvements proposed in St. James's park, opposite to Buckingham Palace," to put the country to an expense of about 15,000*l.*, when certainly 1,500*l.* would accomplish all that is required. It is proposed to alter the present line of iron railing to the enclosures of St. James's and the Green Parks, to which there can be no objection; but why, or for what reason, the present ornamental piece of water is to be destroyed, and encroached upon by a stiff, formal, and unsightly enclosure of iron railing, which is estimated at 15,000*l.*, is utterly impossible to conjecture; there is nothing gained by it, and it is not of the slightest advantage either to the Palace, or much less to the public.

There is a sum of 6,116*l.* put down for iron railing, gates, &c. in front of the Palace. What has become of the expensive bronze railing put up by the late Mr. Nash? SUN.

PROTECTION OF ARTICLES EXHIBITED FROM PIRACY.

UNDER this title the executive committee of the International Exhibition Commission have issued a circular calling attention to the passing of the new Act promised by them for the protection of new designs, inventions, and manufactures from piracy while being exhibited at the great gathering of '51. After pointing out the advantages thus obtained for "original designs," however, the circular goes on to state, in the end of a paragraph, that "it is necessary that intending exhibitors should clearly understand that the provisional registration conferred by the new Act cannot be applied to the articles of new manufacture or invention, for which a protection by letters patent is necessary." In fact, the new act of grace "for the protection of articles exhibited, from piracy of the design," for which the circular itself reminds the reader that the commissioners promised that "arrangements will be made," turns out to be something like the play of "Hamlet," with the part of the prince himself left out. As observed by the *Journal of Design*, while thanking the Commons for small mercies, "all that the new law now

enacts for 'provisional registration' is, that ornamental designs and 'utility' designs may have it—a mighty work to engage the labours of Parliament—an Act to save the payment of fees varying from 1*s.* to 10*l.* which the Treasury already had power to dispense with, whilst unpatented articles, for which it would have been of real usefulness, are excluded,—after the Government had attempted to include them!

"But this was not all, for the preamble of the Lords' Bill, which set forth that it was expedient 'to encourage the exhibition of works of art,' was further mutilated in the Commons by the ungracious omission of these very words. Is the poor man, who cannot afford to purchase a 'patent' protection at 150*l.* to be invited to exhibit the fruits of his ingenuity and labour, and to be left to the mercy of pirates? Is the foreigner to be honoured as our guest that we may rob him? Is the pledge of the Royal Commission to be without meaning? We are in the dark for the present, and must leave manufacturers and inventors to seek a solution of these questions themselves."

MISCELLANEA.

THE NEW STAMP ACT.—The New Stamp Act, 13 & 14 Vict. c. 97, will come into operation on the 11th of October. It contains twenty-one sections, and a very long schedule of the new duties which will then be enforced. Among the provisions are several of a new character with reference to stamp duties. The allowance of "one and a half per cent." to sellers of receipt stamps is now repealed, and the former allowance of "seven and a half per cent. made." The stamp duties imposed by various statutes are repealed by the new law, and the duties are to be under the management of the Inland Revenue Commissioners. The stamp duties on leases for one year, and on bargains and sales, are wholly repealed. With respect to money received expressly for stamp duty, it is provided that persons receiving money for stamp duties, and misappropriating it, are to be liable to the Crown for the amount in the Court of Exchequer, which Court is empowered to enforce payment in a summary manner. For securing the payment of stamp duties penalties are imposed, with a proviso that they may be remitted if it be proved that the omission to stamp within twelve months arose from "accident, inadvertency, or urgent necessity." Documents in courts have been rejected on account of not having a sufficient stamp, and for remedy an additional stamp may now be affixed.—*Law Times*.

CAMBRIAN ARCHEOLOGICAL SOCIETY.—Among the papers read at the meeting at Dolgelly last week, was one by the Rev. W. Wynne Ffoulkes, M.A., on "The Site of the Last Battle fought between Ostorius and Caractacus, A.D. 51." He argued that the place was Brieddyn, on the borders of Montgomeryshire, and illustrated his opinion by maps and plans. The paper excited much interest; as also did one by the Rev. Longueville Jones, Inspector of schools in Wales, on "The Reparation of Castles in Wales and the Marches;" and William Rees, Esq., Llandovery, read a paper which had been addressed to himself from the Ven. Archdeacon Williams, of Llandovery, explaining the view taken by the latter on the best mode of advancing Welsh literature and antiquities.

A NEW METAL.—According to a paper read before the Stockholm Academy of Sciences, a new metal has been discovered by M. Ulgren, and has received the name, "Aridium,"—intended, it may be, but rather unhappily we think, to contrast with "Iridium," another of this class of mongrel metals. Aridium is found principally in the chrome-iron ores of Norra. Its oxides show some analogy to those of iron. Metallic aridium has not yet been obtained, so that its existence, after all, is merely inferred from analogy, though doubtless with quite sufficient reason.

LONDON MECHANICS' INSTITUTION.—A conversation, in aid of the funds of this the earliest popular scientific institution in London, is fixed to take place on the 18th. This institution has strong claims on the friends of progress.